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Effect of bleeding complications as assessed by the National Cardiovascular Data Registry (NCDR) bleeding risk calculator in patients undergoing Primary Percutaneous Coronary Intervention

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BACKGROUND Bleeding in patients undergoing percutaneous coronary intervention (PCI) is associated with increased morbidity, mortality, length of hospitalization, and cost. National Cardiovascular Data Registry (NCDR) bleeding risk calculator is one such tool which has been validated to predict bleeding risk in such patients.

METHODS Data for all patients who underwent PCI for ST-elevation myocardial infarction (STEMI) and Non-STEMI from December 2013 to March 2015 at our hospital was studied retrospectively. Patients were divided in to three groups: Group A with NCDR bleeding Score 1 to 7 (low risk); Group B with 8 to 17 (moderate risk) and Group C with >18 (high risk). The data was taken from NCDR's ACTION Registry for our hospital. The effect of bleeding complications as calculated by the NCDR calculator on bleeding events, length of hospital stay, readmissions and mortality was assessed. Continuous data were expressed as mean SD and categorical data as percentage. ANOVA was used for continuous variables, and Chi Square test was used for categorical variables as appropriate.

RESULTS Among all 802 patients, Group A had 31 patients with 100% males and mean age of 54.5±6.8 years versus Group B with 427 patients with 363 (85%) male and mean age of 59.9±11.6 years versus Group C with 344 patients with 150 (43.6%) males and mean age 71±13.5 years. Refer to Table 1 for different parameters.

Incidence of different factors	Group A	Group B	Group C	p-value
Cardiogenic shock	0(0%)	0(0%)	27(7.8%)	<0.001
Congestive Heart Failure, N (N %)	0(0%)	11(2.6%)	75(21.8%)	<0.001
Patients on GPIIb IIIa inhibitors, N (N %)	4(12.9%)	45(10.5%)	40(11.5%)	0.97
Patients on Warfarin, N (N%)	0(0%)	13(3%)	22(6.4%)	<0.05
Significant Access site Hematoma, N (N %)	1(3.2%)	4(0.9%)	3(0.9%)	0.4
Retroperitoneal hematoma, N(N %)	0(0%)	0(0%)	3(0.9%)	0.13
Gastrointestinal bleed	0(0%)	2(0.5%)	6(1.7%)	0.17
Blood transfusion, N (N %)	0(0%)	26(6.1%)	35(10.2%)	<0.05
Length of stay in days Mean ±SD	2±1	3.6± 5.4	4.1±5.2	<0.05
Readmissions in 30 days, N (N %)	0(0%)	12(2.8%)	37(10.8%)	<0.001
All-cause mortality N (N%)	0(0%)	4(0.9%)	27(7.8%)	< 0.001

CONCLUSIONS There was a statistically significant increase in the bleeding events, length of stay, readmissions and deaths in the patients with higher NCDR scores. Improved identification of high-risk patients will enable physicians to develop alternative approaches to mitigate the risk of bleeding and potentially improve outcomes among patients undergoing PCI.

CATEGORIES CORONARY: PCI Outcomes

KEYWORDS Bleeding, Primary PCI, Registry

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Septal Surfing in Retrograde Recanalization of Chronic Total Occlusions: The Quebec Experience

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BACKGROUND The ability to cross a collateral channel (CC) with a wire and position a microcatheter (MC) at the distal CTO cap is an essential step to technical success in retrograde approach. The suitability for crossing a septal CC has been considered dependent on the size of CC and the ability to visualize a connection. However, the ability to successfully cross a septal CC might depend on the technique used. We examined the feasibility and safety of "Septal Surfing" (SS) technique in a consecutive series of patients.

METHODS Among 403 CTO procedures performed between 01.2009 and 01.2015 by a single CTO operator (SR) or a team of 2 operators (SR and CMN) in our institution, we selected only those where septal CC were utilized as a part of a retrograde or hybrid CTO approach. We assessed our ability to place the wire with or without the MC as a function of the appearance of the septal CCs. We preferentially used the SS technique to cross septal CCs; this technique involves the advancement of the wire searching for a path of least resistance. Tip injections (TI) are performed without wedging the MC and only in failed attempts. We used the Werner classification to assess the CCs, as well as other factors that may influence success in crossing the CC such as the number of septals from the main donor artery, tortuosity in its course, especially in their distal 1/3, need for distal TI. We examined what we called the 'Surfers Paradise' angiographic sign, defined as the presence of ≥5 septal trunks ≥1mm from the donor artery, each with visible septals running straight in the mid 1/3 of the septum, with a 'tree-like' network in the distal 1/3, as a predictor of septal crossing. We also assessed time to cross the septals, to cross the CTO and presence of septal perforations.

RESULTS The final study cohort had 129 patients with J-CTO score ≥2 in 82.9%. The average time to cross the septal CC with SS was 21.3 ± 2.3 minutes. TI was required in 27.1% of cases. Septal CC were successfully crossed with the SS technique in 78.3% of cases. The MC was able to reach the distal cap of CTO in 76.7% of cases (98% of all CC crossed with the wire). Successful placement of the guidewire at the distal cap was done in 83.3% with CC0, 72.3% with CC1 and 90.9% with CC2 (p=NS). The success rate of septal crossing was 93.1% if the 'Surfers Paradise' angiographic sign was present and 74% if absent (p<0.01). 1/3 of cases had septal perforations; they were minor and asymptomatic.

CONCLUSIONS SS is a simple and safe technique of crossing septal CC in retrograde CTO PCI with high success rate. Therefore, small or even invisible channels should not discourage a CTO operator to attempt a retrograde technique when the algorithm suggests it is the preferred approach for a given anatomy. In fact, surfing CC0/CC1 septals rather than CC2 in order to avoid ischemia during collaterals crossing or in case of perforation, may be safer. The 'Surfers Paradise' angiographic sign is a predictor of successful retrograde gear placement.

CATEGORIES CORONARY: PCI Outcomes

KEYWORDS Chronic total occlusion, Collateral grade, Percutaneous Coronary Intervention. CTO

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Association of Peri-procedural Myocardial Infarction with Long-term survival in Patients Treated with Coronary Revascularization Therapy of Chronic Total Occlusion

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BACKGROUND Little is known about the clinical impact of PMI on long-term cardiac mortality after CTO revascularization in patients with CTO.

METHODS We analyzed data from 927 patients with CTO and stable angina who were treated with coronary artery bypass grafting (CABG, n=367) or percutaneous coronary intervention (PCI, n=560). PMI was defined as a peak CK-MB ≥ 3 times the upper limit of normal (ULN) after PCI or CK-MB ≥ 5 times the ULN after CABG. The primary outcome was cardiac death in patients with PMI (PMI group, n=118 [12.7%]) and without PMI (No PMI group, n=809 [87.3%]) after revascularization.

RESULTS During a median follow-up duration of 42 months, PMI occurred in 118 patients (12.7% of total study population). 59 patients treated with PCI (10.5% of PCI subgroup) and 59 patients treated with CABG (16.1% of CABG subgroup) suffered from PMI. In multivariate analysis, the PMI group had a similar incidence of cardiac death (hazard ratio [HR] 0.57; 95% confidence interval [CI] 0.20 to 1.62; p=0.29) compared to the No PMI group.